MASTER FILE

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DSSD CENSUS 2000 PROCEDURES AND OPERATIONS MEMORANDUM SERIES
#LL- 3

MEMORANDUM FOR Barbara M. LoPresti
                Chief, Technologies Management Office

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                Long Form Sample Design and Estimation Team

Subject: Approval of the Sample Tolerance Check Software for Census 2000

The Long Form Sample Design and Estimation Team has reviewed and approved the Sample Tolerance Check (STC) software developed by the Technologies Management Office (TMO) for use in List/Enumerate areas in Census 2000[1].

The Decennial Statistical Studies Division (DSSD) provided test input files to the TMO for verifying that the STC software is performing as specified. Theses files simulated various biases using sampling rates applied correctly and incorrectly. The test files also simulated unbiased sampling using sampling rates applied both correctly and incorrectly. The TMO provided the DSSD output files produced by the STC software based on the provided input files for verification. The following variables, calculations, and criteria were verified as part of the STC software approval process:

1.   Batch Creation - The program created the appropriate batch level input file from the AA level input files that contained variables for form type, number of persons in HU, Assignment Area (AA) number, processing ID, AA sampling rate (AASR)

2.   Calculations - The program correctly calculated the following AA level variables used in the STC: total number of forms, total number of long forms, total population, total long form population, observed sampling rate, designated sampling rate, long form population estimate, and the population variance on the number of people per housing unit.

[1] See DSSD Census 2000 Procedures and Operations Memorandum Series #LL-1, 'Sample Tolerance Check Specifications for Census 2000'.

The program correctly calculated the following batch level variables: long form population estimate, total population, variance of the long form estimate of total population, t, and t-critical.

3. Test Results - In every case the program identified those batches that contained a detectable sample bias and flagged them as such. The program also successfully identified those AAs passing the STC, but having a lower sampling rate than specified. The program correctly flagged these AAs as needing to have a supplemental long form sample chosen.

4. Resampling - The program correctly generated the following as part of the resampling procedure: random starts (within specified range), the take-every, the sequence of integers used to identify appropriate records (both short to long and long to short).

The following specific cases were tested.

*   Both AAs in the batch sampled at 1-in-2 as specified. The sample was biased.
*   One AA in the batch sampled at 1-in-6 as specified, one AA sampled at 1-in-2 as specified. The sample was not biased.
*   Both AAs in the batch sampled at 1-in-6 as specified. The sample was biased.
*   The batch did not meet the criteria (10 total forms) to perform the STC.
*   The batch did not meet the criteria (7 long forms) to perform the STC.
*   The batch passed the STC, but one AA in the batch was sampled at a lower rate than specified. This AA was identified by the program to have additional long form sample chosen as specified.
*   The batch consisted of a single AA. The sample was unbiased.
*   The batch consisted of a single AA. The sample was biased.

The first delivery of test output contained two minor inconsistencies. Upon discussion with the TMO the program was updated and the test files were re-run. The second delivery of output showed that the software correctly identified, and when appropriate, resampled all cases listed above.

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